REMARKS

Support for Amendment

The amendment to Claim 1 is supported by Claim 9. Claim 24 is supported by the present specification, page 1, lines 25-27, and page 5, lines 15-22. Claims 25-27 are supported by Claims 4-6, respectively. Claim 28 is supported by Claims 11 and 12. Claim 29 is supported by Claim 14. Claim 30 is supported by Claim 15. Claim 31 is supported by the present specification, page 6, lines 26-28. Claim 32 is supported by Claim 12. No new matter has been added. Upon entry of this amendment Claims 1-8, 10-15 and 24-32 are present and active in the present application.

Request For Reconsideration

When using sub-micron photolithography to pattern a silicon nitride layer, an anti-reflective coating (ARC) is often used to minimize the effects of reflection from the silicon nitride layer. Organic ARC may be spin-coated onto the semiconductor substrate, however, organic ARC may run into problems when trying to obtain optimum photolithography performance. A second approach uses inorganic ARC (IARC) made of silicon oxy-nitride or silicon-rich silicon nitride. IARC is commonly deposited using plasma-enhanced chemical vapor deposition (PECVD). However, IARC also has certain disadvantages, for example, the deposition of the IARC requires an additional step in a PECVD chamber, while the silicon nitride is typically deposited in a low-pressure chemical vapor deposition (LPCVD) chamber. The present invention mitigates these disadvantages.

The present invention includes fabricating a semi-conductor structure, including depositing a nitride layer on the semiconductor substrate with a first tool, and depositing an anti-reflective layer with the first tool. As now specified in claim 1, the depositing of the anti-reflective layer comprises reacting SiH_2Cl_2, NH_3 and N_2O.

The rejection of the claims under 35 U.S.C. § 102(b) over Chang, et al. is respectfully traversed. Chang, et al. describe depositing an oxynitride film by reacting SiH_4 and N_2O.

Chang, et al. describe in-situ nitride and oxynitride deposition in the same chamber. Described is a process of forming a nitride film in an LPCVD system by reacting SiH_4Cl_2 and NH_3 and depositing an anti-reflective oxynitride film in-situ by reacting SiH_4 and N_2O (column 3, lines 15-25). There is no description of any other process for the in-situ deposition of oxynitride. Claim 1, and claims dependent thereon, now specify depositing of the anti-reflective layer comprises reacting SiH_2Cl_2, NH_3 and N_2O. In contrast, Chang, et al. used different chemicals in their reaction to form the anti-reflective layer: SiH_4 and N_2O. There are no other chemicals suggested for forming an anti-reflective coating. Accordingly, Applicants submit that claim 1, and claims dependent thereon, are neither anticipated by, nor obvious over, the applied reference. Withdrawal of this ground of rejection is respectfully requested.

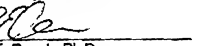
New Claims 24-30 specify that the anti-reflective coating is silicon rich nitride, and these claims are distinguished from the applied reference. Although Chang, et al. do described the deposition of silicon nitride, this reference does not suggest that silicon rich silicon nitride can act as an anti-reflective coating, nor does this reference suggest that silicon-rich silicon nitride can be formed in the same chamber as silicon nitride. Initially, it is

worth noting that silicon-rich silicon nitride is different from silicon nitride. The term "silicon nitride" commonly refers to the stoichiometric material Si_3N_4. The properties of these two materials are different, for example, silicon rich nitride can act as an anti-reflective coating, while silicon nitride does not.

Chang, et al. does not suggest that varying the ratio between SiH_2Cl_2 and NH_3 will have any effect whatsoever on the properties of the silicon nitride formed, or the stoichiometry of the silicon nitride formed; one typically expects chemical compounds to react in fixed ratios, with an excess reactant to simply remain unreacted. Accordingly, there is no suggestion in Chang, et al. that silicon rich silicon nitride can be formed from this system, or that is acts as an anti-reflective coating. Applicants submit that new Claims 24-30 are distinguished from the applied reference.

Applicants submit the application is now ready for allowance. Early notice of such action is earnestly solicited.

Respectfully submitted,



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